

REMARKS

Reconsideration and continued examination of the above-identified application is respectfully requested.

The amendment to the claims are editorial in nature and/or further define what applicants regard as the invention. Full support for the amendment can be found in the application including the claims as originally filed. Also, see page 5 of the present application. Accordingly, no questions of new matter should arise and entry of this amendment is respectfully requested.

At page 2 of the Office Action, the Examiner objects to the specification since numerous pages, according to the Examiner, contain illegible portions due to poor quality photocopying. The Examiner has requested a substitute specification. Furthermore, the Examiner has noted a spelling correction at page 15.

For the following reasons, this objection is respectfully traversed.

In accordance with the Examiner's request, a substitute specification is submitted with this response. To the best of the undersigned's knowledge, the specification is the same as the original application. Furthermore, the spelling correction noted by the Examiner has been made. Accordingly, this objection should be withdrawn.

At page 2 of the Office Action, the Examiner rejects claim 3 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. The Examiner asserts that the phrase "ethylene comonomer" lacks antecedent basis. For the following reasons, this rejection is respectfully traversed.

Claim 3 has been amended to correct this antecedent basis rejection. Ethylene co-monomer has been changed to alkylene co-monomer. Accordingly, this rejection should be withdrawn.

At page 3 of the Office Action, the Examiner rejects claims 1-17 and 20 under 35 U.S.C. §102(e) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Maruyama et al. (U.S. Patent No. 5,973,090). The Examiner asserts that Maruyama et al. teaches fluoropolymers and a method of polymerization as set forth in examples 1-4. The Examiner asserts that co-polymers of chlorotrifluoroethylene, butyl acrylate, cyclohexyl acrylate, and vinyl trimethoxysilane are used. The Examiner further notes that various ratios of monomer and various organo silanes and functional substituents are used. The Examiner further asserts that an emulsion polymerization is used and further asserts that pigments such as titanium dioxide inherently react with the silane group. For the following reasons, this rejection is respectfully traversed.

The claimed invention, in part, relates to a fluoropolymer which contains one or more monomers which are involved in a reaction with at least one sterically hindered alkenyl or alkenyl ether organo-silane co-monomer with or without at least one fluorine substituent. To assist the Examiner, preferred sterically hindered organo-silane co-monomers are set forth in claim 6 of the present application. The importance and advantages of using sterically hindered organo-silane are set forth in the present application; see page 4 of the present application. For instance, if the organo-silane is not sterically hindered, it will react quite quickly in the polymer reaction and hydrolyze.

Keeping the above in mind, Maruyama et al. involves a solution polymerization using chlorotrifluoroethylene. However, the silanes that are used in Maruyama et al., as described at column 2, and in the examples of Maruyama et al., would not be sterically hindered. It is known

that ethoxysilanes are not sterically hindered and will readily hydrolyze in a reaction, especially an aqueous based reaction. The Examiner will note that the type of silanes described at column 2 and in the examples of Maruyama et al. in no way resemble the preferred sterically hindered silanes set forth in claim 6. Thus, since Maruyama et al. does not teach or suggest the presence of at least one sterically hindered alkenyl or alkenyl ether organo-silane co-monomer, Maruyama et al. does not teach or suggest the claimed invention. Accordingly, this rejection should be withdrawn.

At page 4 of the Office Action, the Examiner rejects claims 1-21 under 35 U.S.C. §103(a) as being obvious over Maruyama et al. in view of Charleux et al. (U.S. Patent No. 6,353,065). The Examiner relies on Maruyama et al. as in the above rejection. The Examiner then relies on Charleux et al. to assert that it is known to use potassium carbonate as a buffer agent. For the following reasons, this rejection is respectfully traversed.

The comments set forth above with respect to Maruyama et al. apply equally here to this rejection. In summary, Maruyama et al. does not teach or suggest the presence of at least one sterically hindered organo-silane co-monomer. Charleux et al. does not overcome this deficiency and does not teach or suggest the fluoropolymer of the present application. Accordingly, this rejection should be withdrawn as well.

At the bottom of page 4 of the Office Action, the Examiner rejects claim 1-17 and 20 under 35 U.S.C. §102(e) as being anticipated by or in the alternative, under 35 U.S.C. §103(a) as being obvious over Kobayashi et al. (U.S. Patent No. 5,859,123). The Examiner asserts that Kobayashi et al. relates to a fluoropolymer and method of polymerization and makes particular reference to examples 1-6 of Kobayashi et al. The Examiner asserts that, in these examples, co-polymers of chlorotrifluoroethylene, vinyl butylate, vinyl pivalate and vinyl triethoxysilane are present. The

Examiner further asserts that various ratios of monomer and organo-silane and functional substituents are used. For the following reasons, this rejection is respectfully traversed.

Kobayashi et al. relates to a water-based fluorine-containing emulsion. As can be seen by reading Kobayashi, the polymer of Kobayashi is prepared by co-polymerizing many non-fluorinated polymers and some fluoro-monomers. It is important for the Examiner to appreciate that non-fluorinated monomers in a polymerization reaction are far more reactive than fluorinated monomers and therefore the outcome of the reaction is dominated by the non-fluoro components. In other words, in a reaction where there is fluorinated components and non-fluorinated components the non-fluorinated components will react faster and more readily resulting in a much lower fluorine containing content in the final polymer.

Unlike Kobayashi et al., claim 1 of the present application recites that the fluoro containing components which are component a) and optionally b) are present in a combined amount of at least 80 mol%. At most, Kobayashi states that it is preferable that the amount of the fluoroolefin monomer is 10-70 mol% and more preferably 30-60 mol%. Kobayashi states in the patent that 30-85 mol% of at least one other co-polymerizable monomer is used. Thus, the type of polymer formed will be quite different from the claimed invention. Accordingly, since Kobayashi et al. relates to a different type of polymer with significantly less fluoro components, this rejection should be withdrawn.

At page 5 of the Office Action, the Examiner rejects claims 1-14 under 35 U.S.C. §102(b) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as being obvious over Kuwamura et al. (U.S. Patent No. 4,886,862), Honma et al. (U.S. Patent No. 5,179,181) or Homma et al. (U.S. Patent No. 4,751,114). The Examiner asserts that Kuwamura et al. relates to a

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fluoropolymer and a method of polymerization. The Examiner further asserts that silane compounds which react with the silane group is shown. The Examiner makes similar conclusions with respect to Homma et al. and Honma et al. For the following reasons, this rejection is respectfully traversed.

As stated above, the present invention relates to a fluoropolymer which is the reaction product of at least one fluoro component with a sterically hindered organo-silane co-monomer. As stated above to assist the Examiner, preferred examples, of a sterically hindered organo-silane group are shown, for instance, in claim 6 of the present application.

Unlike the present application, each of these cited references, Kuwamura et al., Homma et al., and Honma et al. do not teach or suggest hindered silanes. Each of the silanes set forth in these references are unhindered silanes and would be quite hydrolyzable, for instance, in a water-based emulsion. A simple comparison of the type of silanes set forth in each of these references with, for instance, the silanes set forth in claim 6 of the present application will assist the Examiner in confirming the difference with respect to the steric chemistry of the silanes. Accordingly, for these reasons, this rejection should be withdrawn as well.

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CONCLUSION

In view of the foregoing remarks, Applicants respectfully request the reconsideration of this application and the timely allowance of the pending claims.

If there are any other fees due in connection with the filing of this response, please charge the fees to Deposit Account No. 50-0925. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, such extension is requested and should also be charged to said Deposit Account.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Luke A. Kilyk', with a long horizontal flourish extending to the right.

Luke A. Kilyk
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